UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,327	03/29/2004	Paul James Broyles III	200313477-1	2718

22879 7590 03/25/2005

HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER	
DOUGHERTY, ANTHONY T	
ART UNIT	**PAPER NUMBER**
2863	

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/812,327	BROYLES ET AL.	
	Examiner	Art Unit	
	Anthony T. Dougherty	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/29/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 9 objected to because of the following informalities: Line 5 of claim 9 recites the limitation "in the computer and, *is* the storage device is still" (emphasis added), which is believed by the examiner to be a typographical error and "in the computer and, *if* the storage device is still" (emphasis for identification only) was meant instead. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2, 4-12, 14-17, and 19-28 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,496,346 to Bruckner.

With regard to claim 1 the primary reference to Bruckner discloses a method for cooling a processor based device contained in a computer (see abstract), by determining the temperature of the device (see column 4 line 32-36), and adjusting computer operation so as to reduce the temperature of the device if that temperature is deemed to be too high (see column 2 line 58 through column 3 line 47). However, Bruckner fails to disclose specifically the processor based device is a storage device.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the temperature control method of Bruckner for a processor based device within a storage device that contains a processor.

Accordingly, such a modification would have been obvious since Bruckner teaches a processor based storage device such as a hard disk drive may suffer in performance if operated beyond certain temperature conditions (see column 1 line 40-45 & column 2 line 44-47), thereby suggesting the obviousness of the modification.

With regard to claim 2, and applying the rejection of claim 1 above, Bruckner discloses determining the temperature of the device by measuring the temperature of the device using a temperature sensor provided in or on the device (see column 4 line 32-36).

With regard to claim 4, and applying the rejection of claim 1 above, Suzuki et al. discloses reducing the temperature of the storage device by increasing the speed of a fan contained within the computer (see column 3 line 4-10).

With regard to claim 5, and applying the rejection of claim 1 above, Suzuki et al. discloses reducing the temperature of the storage device by adjusting the operation of a processor contained within the computer (see column 2 line 58-65).

With regard to claim 6, and applying the rejection of claim 5 above, Bruckner discloses reducing the clock speed of the processor (see column 2 line 58-65).

With regard to claim 7, and applying the rejection of claim 5 above, Bruckner discloses reducing a voltage provided to the processor (see column 4 line 45-54).

With regard to claim 8, and applying the rejection of claim 1 above, Bruckner discloses 2 reducing the temperature by shutting down the computer (see column 3 line 38-47).

With regard to claim 9, and applying the rejection of claim 1 above, Bruckner discloses reducing the temperature by first increasing the speed of a fan contained in the computer (see column 2 line 53) and, if the storage device is later determined to still be too hot, reducing one or both of a clock speed of and a voltage provided to a processor contained in the computer (see column 2 line 54-56) and, if the storage device is still later determined to be too hot, shutting down the computer (see column 1 line 55-61 & column 3 line 27-29).

With regard to claim 10, and applying the rejection of claim 1 above, Bruckner discloses data regarding temperature operating parameters of the storage device and using that data to determine whether the storage device is or is not too hot (see Table 1).

With regard to claim 11 Bruckner discloses a method for cooling a processor based device contained in a computer (see abstract) by periodically measuring the temperature of the device (see column 4 line 32-36), with a temperature sensor provided in or on the device (see column 4 line 32-36), and periodically providing temperature data including the measured

temperature and temperature operating parameters for the device to a basic input/output system (BIOS) so that the BIOS can control operation of the computer in an effort to cool the device (see column 3 line 30-37).

However, Bruckner fails to disclose specifically the processor based device is a storage device.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the temperature control method of Bruckner for a processor based device within a storage device that contains a processor.

Accordingly, such a modification would have been obvious since Bruckner teaches a processor based storage device such as a hard disk drive may suffer in performance if operated beyond certain temperature conditions (see column 1 line 40-45 & column 2 line 44-47), thereby suggesting the obviousness of the modification.

With regard to claim 12, and applying the rejection of claim 11 above, Bruckner discloses measuring the temperature of the device in response to commands received by a device driver stored memory of the computer (see column 3 line 30-37).

With regard to claim 14, and applying the rejection of claim 11 above, Bruckner discloses periodically providing temperature data by providing the data to a storage device driver of the computer that provides the data to the BIOS(see column 3 line 30-37).

With regard to claim 15, and applying the rejection of claim 11 above, Bruckner discloses periodically providing temperature by providing information regarding an ideal temperature operating range and a critical temperature to the BIOS (see Table 1 & column 3 line 30-37).

With regard to claim 16 Bruckner discloses a system for cooling a processor based device in a computer (see abstract) with means for measuring the temperature of the device (see column 4 line 32-36), the means being directly associated with the device (see column 4 line 32-36), means for sending the measured temperature (see column 4 line 32-34), and means for adjusting operation of the computer in relation to the measured temperature (see column 2 line 58 through column 3 line 47). However, Bruckner fails to disclose specifically the processor based device is a storage device.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the temperature control method of Bruckner for a processor based device within a storage device that contains a processor.

Accordingly, such a modification would have been obvious since Bruckner teaches a processor based storage device such as a hard disk drive may suffer in performance if operated beyond certain temperature conditions (see column 1 line 40-45 & column 2 line 44-47), thereby suggesting the obviousness of the modification.

With regard to claim 17, and applying the rejection of claim 16 above, Bruckner discloses a temperature sensor provided in or on the storage device (see column 4 line 32-36).

With regard to claim 19, and applying the rejection of claim 17 above, Bruckner discloses the means for sending the measured temperature comprise a controller of the device (see column 4 line 32-34).

With regard to claim 20, and applying the rejection of claim 17 above, Bruckner discloses the means for adjusting operation of the computer comprises a basic input/output system (BIOS) (see column 3 line 30-37).

With regard to claim 21, and applying the rejection of claim 20 above, Bruckner discloses the BIOS is configured to increase the speed of a fan contained in the computer (see column 2 line 53), reduce one or both of a clock speed of and a voltage provided to a processor contained in the computer (see column 2 line 54-56), or shut down the computer if the device is too hot (see column 1 line 55-61 & column 3 line 27-29).

With regard to claim 22 Bruckner discloses a system stored on a computer readable medium (see column 3 line 30-37) with logic configured to read a temperature of a processor based device (see column 4 line 32-36), logic configured to command the logic configured to read a temperature to read that temperature (see column 4 line 34-36 & column 5 line 5-6) and logic configured to receive the read temperature and to control operation of a computer relative to the read temperature (see column 2 line 58 through column 3 line 47). However, Bruckner fails to disclose specifically the processor based device is a storage device.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the temperature control method of Bruckner for a processor based device within a storage device that contains a processor.

Accordingly, such a modification would have been obvious since Bruckner teaches a processor based storage device such as a hard disk drive may suffer in performance if operated beyond certain temperature conditions (see column 1 line 40-45 & column 2 line 44-47), thereby suggesting the obviousness of the modification.

With regard to claim 23, and applying the rejection of claim 22 above, Bruckner discloses the logic configured to read a temperature is configured to reside in memory of the device (see column 3 line 30-37).

With regard to claim 24, and applying the rejection of claim 22 above, Bruckner discloses logic configured to read a temperature comprises a storage device driver (see column 3 line 30-37).

With regard to claim 25, and applying the rejection of claim 22 above, Bruckner discloses the logic configured to command the read temperature and to control operation of a computer comprises a computer basic input/output system (BIOS) (see column 3 line 30-37).

With regard to claim 26 Bruckner discloses a thermal monitor (see abstract) with logic configured to command a processor based device driver to periodically collect temperature data

from the device (see column 3 line 30-37 & column 4 line 32-36 & column 5 line 5-6), with logic configured to provide the collected temperature data to a computer basic input/output system (BIOS) to enable the BIOS to control operation of the computer (see column 3 line 30-37 & column 2 line 58 through column 3 line 47). However, Bruckner fails to disclose specifically the processor based device is a storage device.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the temperature control method of Bruckner for a processor based device within a storage device that contains a processor.

Accordingly, such a modification would have been obvious since Bruckner teaches a processor based storage device such as a hard disk drive may suffer in performance if operated beyond certain temperature conditions (see column 1 line 40-45 & column 2 line 44-47), thereby suggesting the obviousness of the modification.

With regard to claim 27 Bruckner discloses acomputer basic input/output system (BIOS) (see column 3line 30-37), with logic configured to receive a temperature of a processor based device measured by the device (see column 4 line 32-36), logic configured to compare the measured temperature with temperature operating parameters for the device (see Table 1), and logic configured to control operation of a computer in which the device is provided in a manner that reduces the temperature of the device (see column 2 line 58 through column 3 line 47). However, Bruckner fails to disclose specifically the processor based device is a storage device.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the temperature control method of Bruckner for a processor based device within a storage device that contains a processor.

Accordingly, such a modification would have been obvious since Bruckner teaches a processor based storage device such as a hard disk drive may suffer in performance if operated beyond certain temperature conditions (see column 1 line 40-45 & column 2 line 44-47), thereby suggesting the obviousness of the modification.

With regard to claim 28, and applying the rejection of claim 27 above, Bruckner discloses the logic is configured to control operation of a computer comprises logic configured to increase the speed of a fan contained in the computer (see column 2 line 53), reducing one or both of a clock speed of and a voltage provided to a processor contained in the computer (see column 2 line 54-56), or shut down the computer if the storage device is too hot (see column 1 line 55-61 & column 3 line 27-29).

4. Claims 3, 13, and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,496,346 as applied to claims 1, 11, and 17 above, and further in view of U.S. Patent No. 6,169,442 to Meehan et al.

With regard to claims 3, 13, 18 the primary reference to Bruckner fails disclose measuring the temperature of the storage device using a thermal diode of the device.

The secondary reference to Meehan et al. discloses using a thermal diode to measure the temperature of a storage device (see column 12 line 17-20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have specified measuring the temperature of the storage device using a thermal diode of the device.

Accordingly, such a modification would have been obvious since Meehan et al. teaches using a thermal diode allows for remotely measuring temperature of a device (see column 12 line 23-25), thereby suggesting the obviousness of the modification.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,535,798 to Bhatia et al. because it teaches thermal computer control using processor clock control.

U.S. Patent No. 6,029,119 and 6,336,080 to Atkinson because they teach thermal management of computers using indirect measurements to establish temperature.

U.S. Patent No. 6,134,667 to Suzuki et al. because it teaches a storage device with integrated temperature sensor for determining when to activate a cooling fan.

U.S. Patent No. 6,865,506 to Escobar et al. because it teaches a storage device testing environment with temperature control.

U.S. Patent No. 6,636,910 to Kung et al. because it teaches thermal control circuitry utilizing frequency control.

U.S. Patent No. 6,414,843 to Takeda because it teaches a thermal control system for a computer utilizing a remote sensor.

U.S. Patent No. 6,446,213 to Yamaki because it teaches thermal control system for a computer utilizing a thermal diode in a processor.

U.S. Patent No. 6,848,054 to Watts, Jr. because it teaches a thermal control system for a computer utilizing clock control and power conservation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony T. Dougherty whose telephone number is (571) 272-2273. The examiner can normally be reached on Monday through Friday from 8 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

atd

John Barlow
Supervisory Patent Examiner
Technology Center 2800